2A (Beta-carotene)

2B (Lutein)

2C (Zeaxanthin)

2D (Canthaxanthin)

2E (Astaxaxanthin)

FIG. 1

FIG. 2

Control

0.01μm

0.02μm

3413   3488   3563

Magnetic Field (Gauss)

FIG. 3

Infarct Size / Area at Risk

63.1%

35.1%

☒ Control: 63.1 +/- 2.5 (vehicle, N=3) in controls
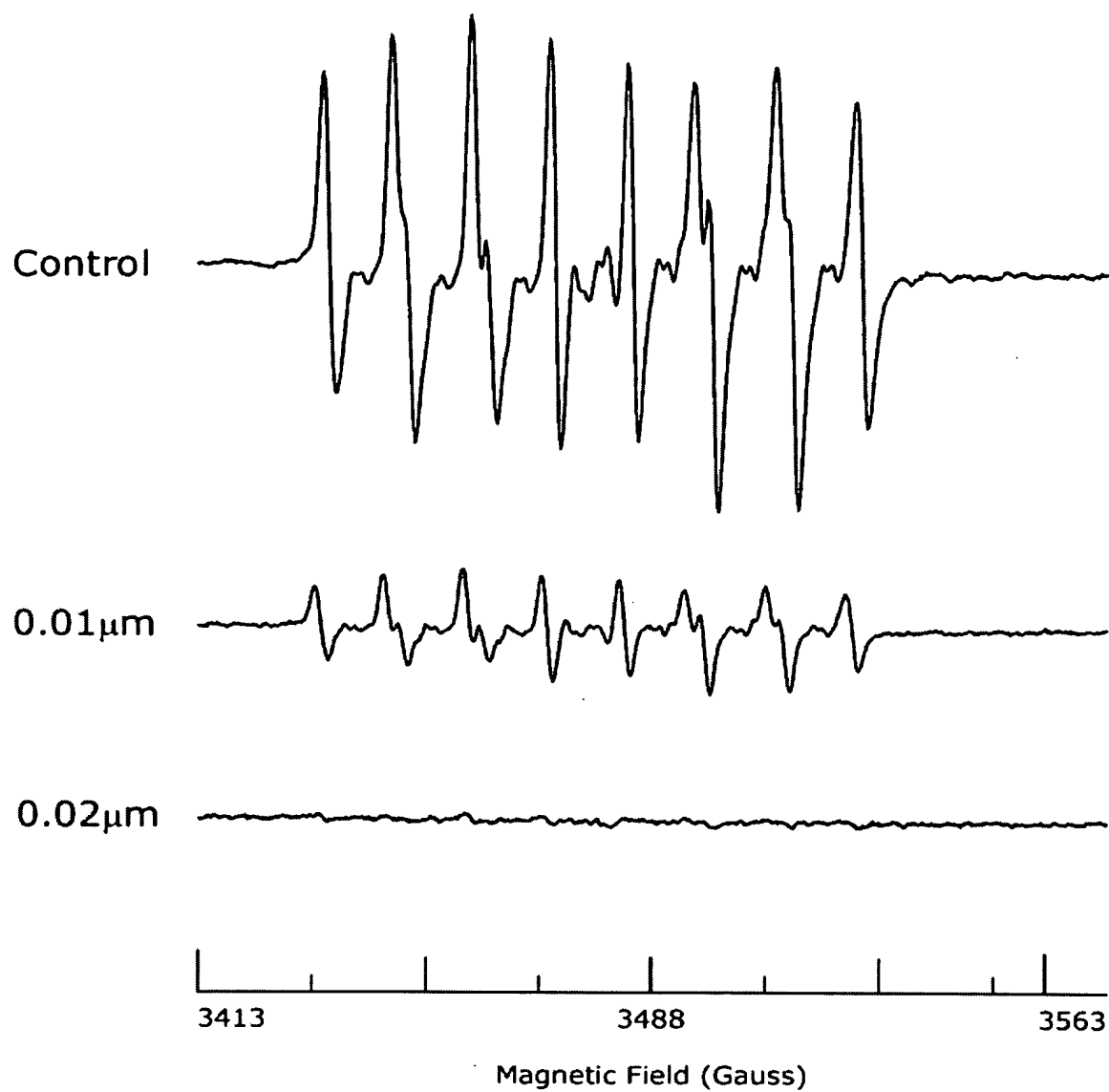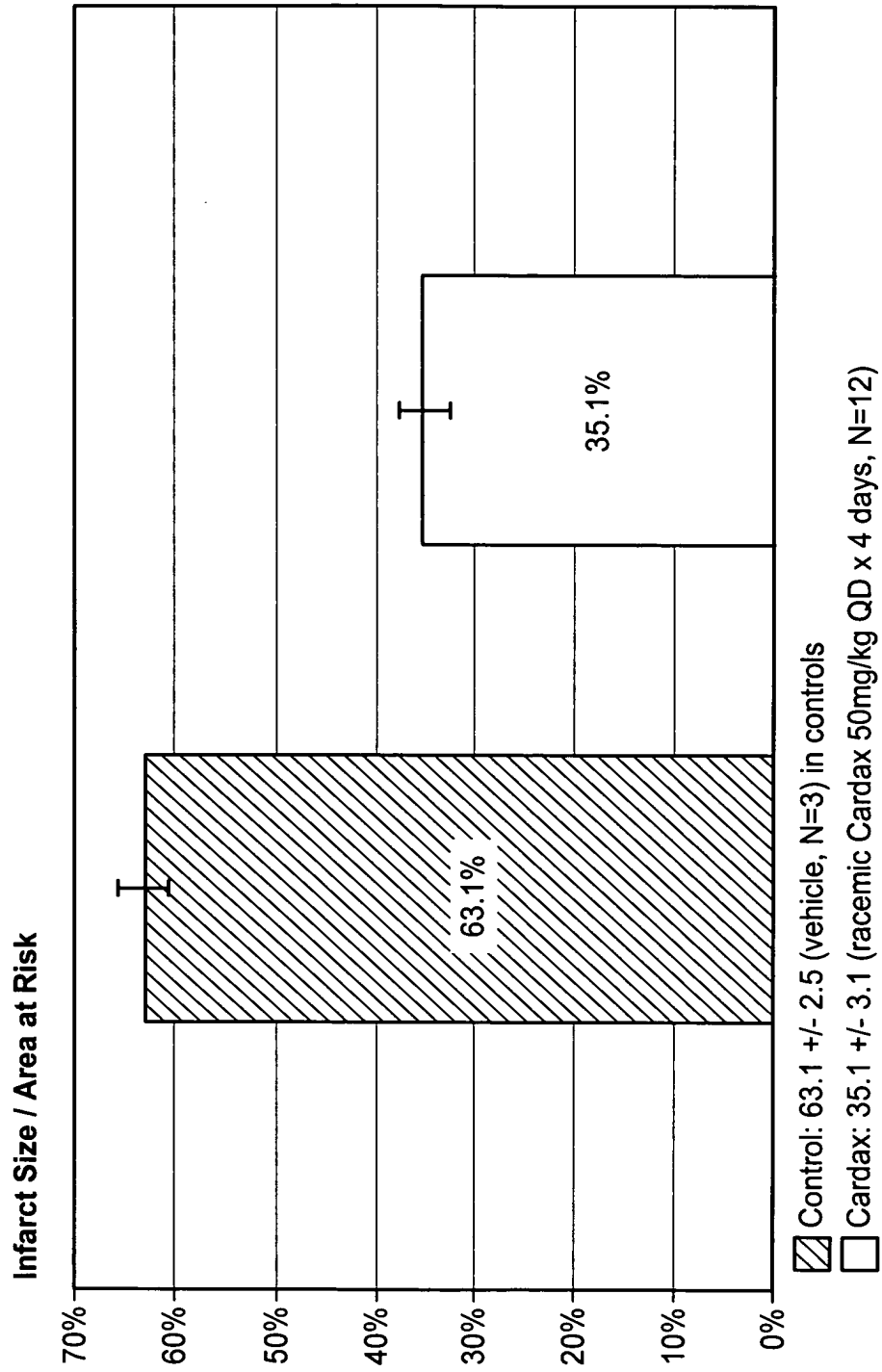☐ Cardax: 35.1 +/- 3.1 (racemic Cardax 50mg/kg QD x 4 days, N=12)

Mean reduction in infarct size = 44% (P* = 0.01, unpaired *t* test).

FIG. 4

FIG. 5
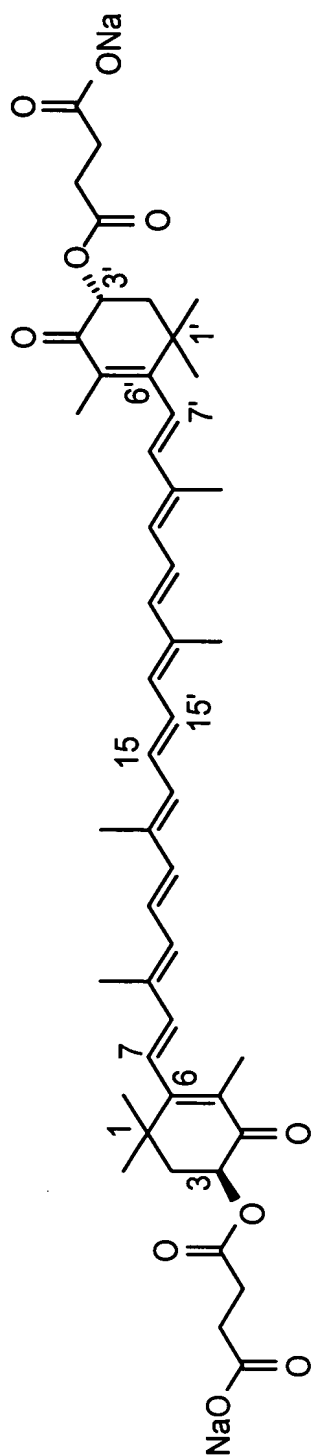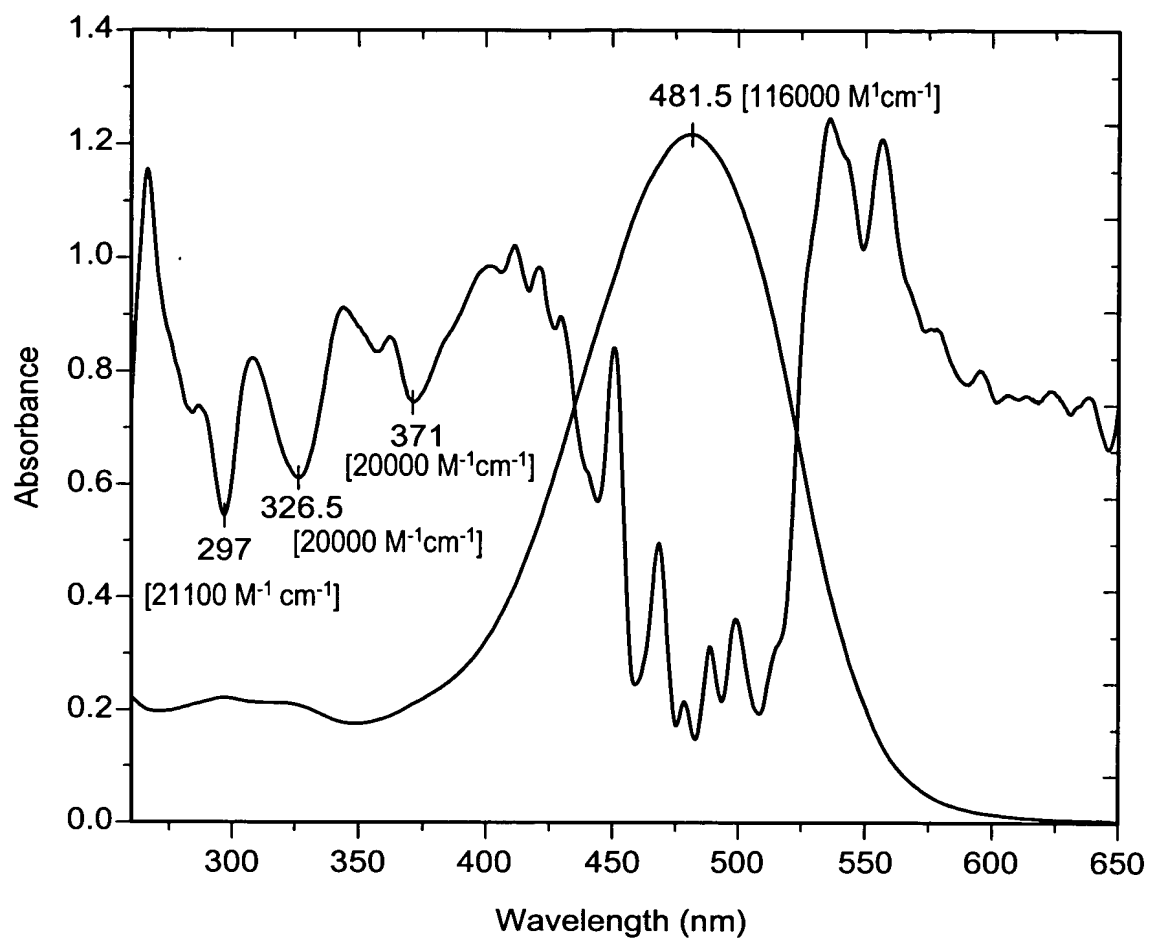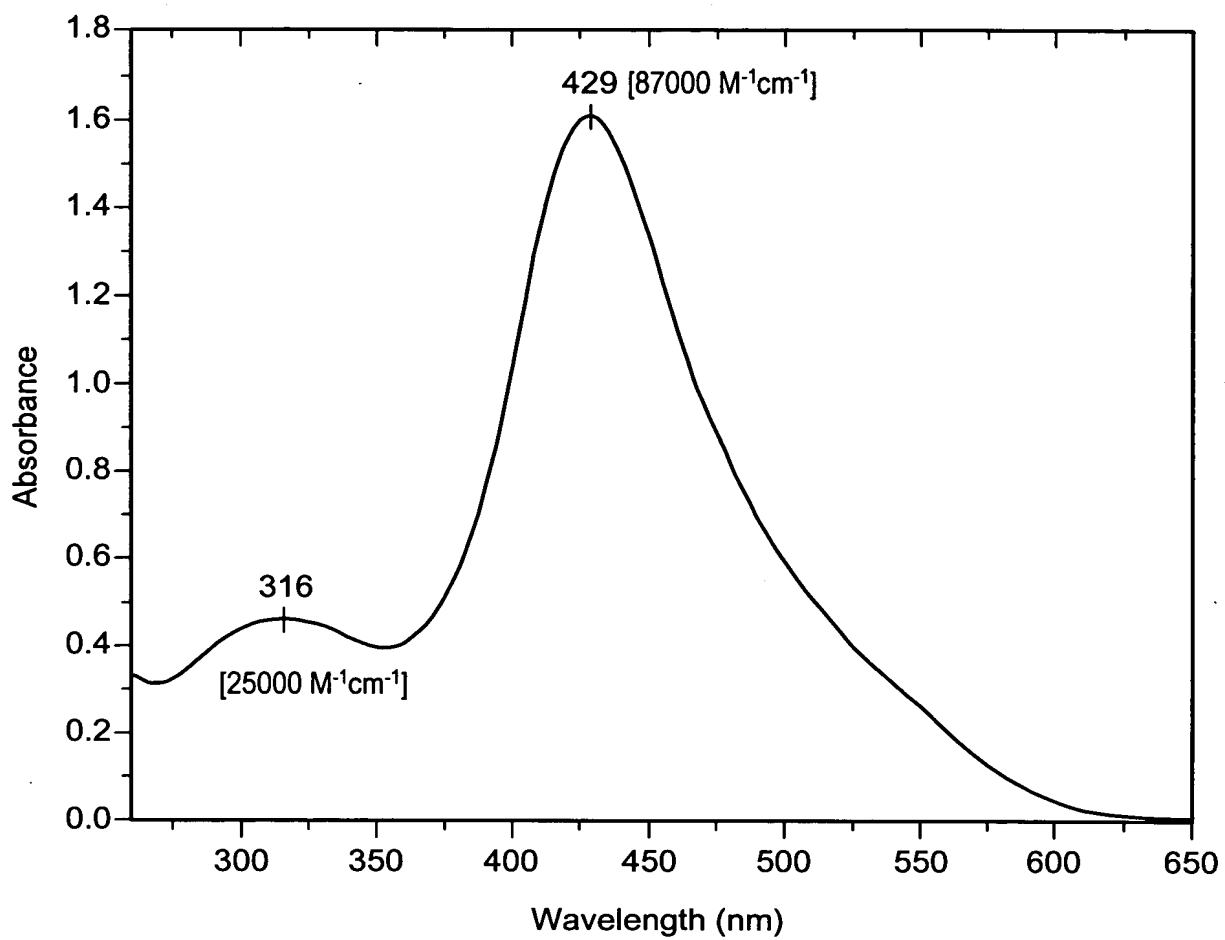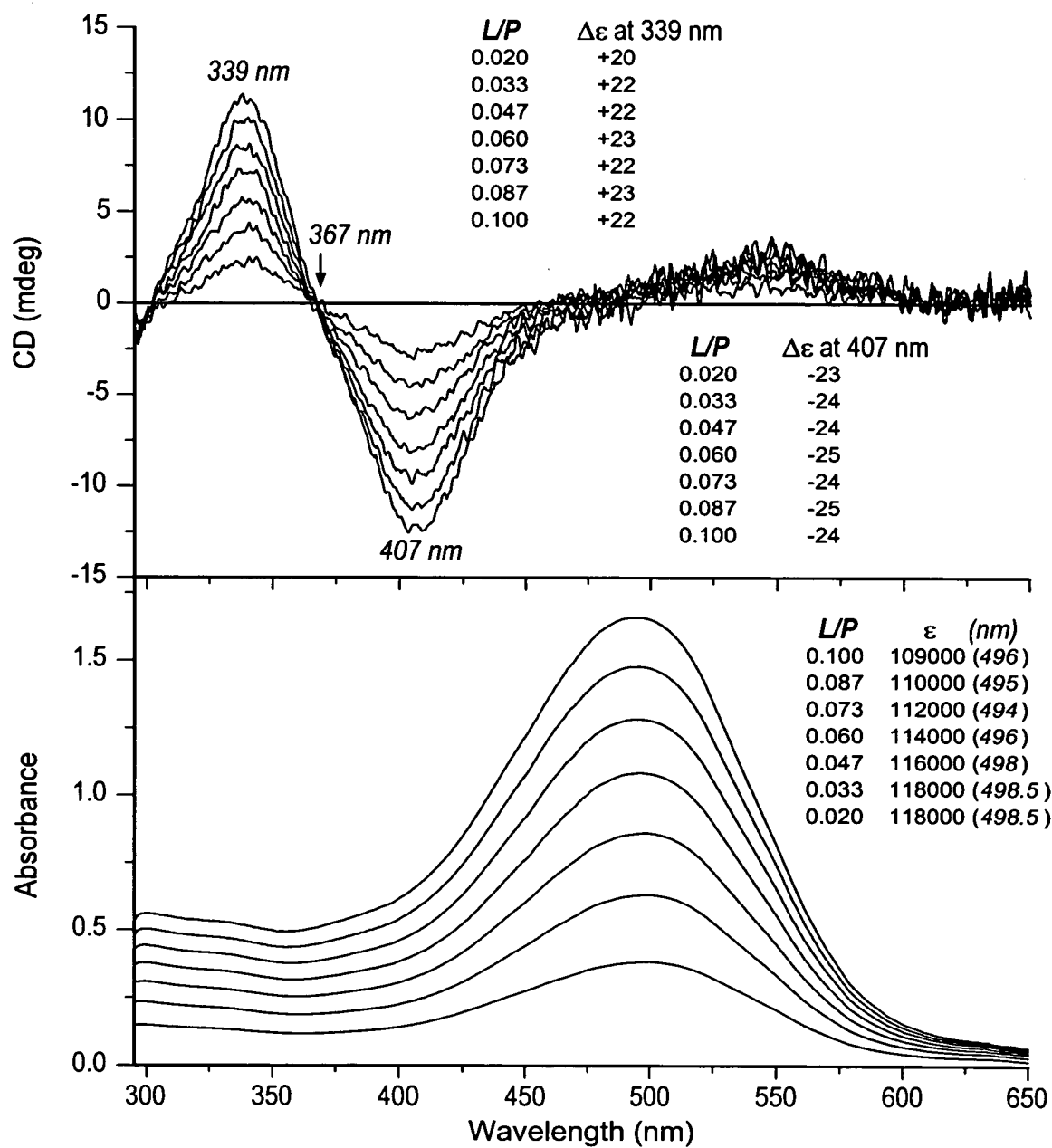
FIG. 6

FIG. 7

L/P	Δε at 339 nm
0.020	+20
0.033	+22
0.047	+22
0.060	+23
0.073	+22
0.087	+23
0.100	+22

L/P	Δε at 407 nm
0.020	-23
0.033	-24
0.047	-24
0.060	-25
0.073	-24
0.087	-25
0.100	-24

L/P	ε (nm)
0.100	109000 (496)
0.087	110000 (495)
0.073	112000 (494)
0.060	114000 (496)
0.047	116000 (498)
0.033	118000 (498.5)
0.020	118000 (498.5)

FIG. 8

L/P	Δε	(nm)
7.4	+10	480.5
5.7	+11	482
4.1	+11	485.5
2.9	+11	490.5
2.0	+10	499
1.2	+10	509.5

L/P	Δε	(nm)
1.2	-11	412
2.0	-11	419
2.9	-13	417.5
4.1	-15	417
5.7	-15	415
7.4	-14	414.5

L/P	ε	(nm)
7.4	85000	434.5
5.7	84000	436
4.1	83000	437
2.9	83000	438
2.0	84000	439
1.2	83000	439.5

FIG. 9

L/P	Δε	(nm)
13.1	+55	478.5
10.6	+54	480
9.0	+51	481.5
7.4	+46	484.5
5.7	+39	485
4.1	+30	490
2.9	+22	495.5
2.0	+16	501

L/P	Δε	(nm)
2.0	-14	414.5
2.9	-31	433
4.1	-38	429.5
5.7	-47	429.5
7.4	-54	428.5
9.0	-58	425.5
10.6	-61	425.5
13.1	-62	425

L/P	ε	(nm)
13.1	77000	445.5
10.6	77000	447.5
9.0	77000	449.5
7.4	78000	451.5
5.7	79000	455
4.1	80000	460
2.9	84000	473.5
2.0	87000	480

FIG. 10

FIG. 11A

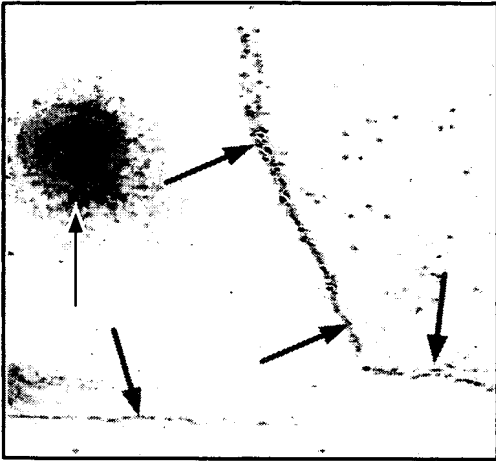FIG. 11B

FIG. 11C

FIG. 12

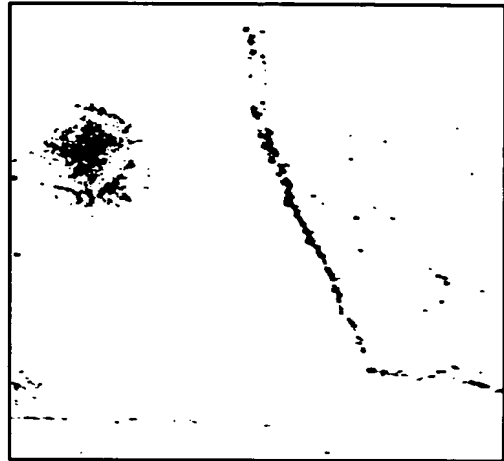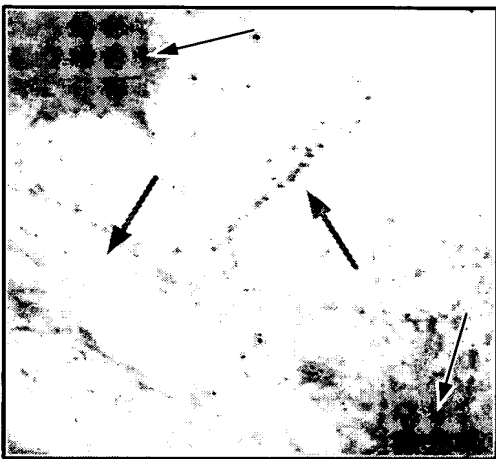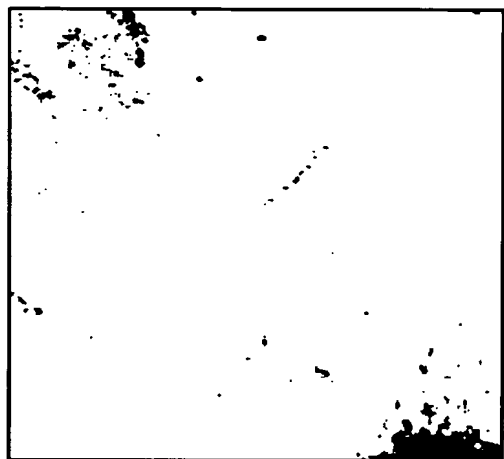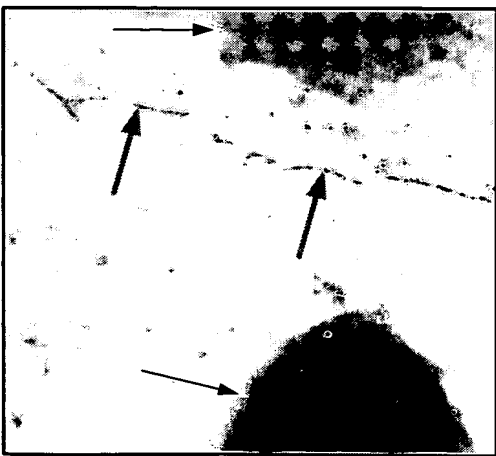IIIB

IB

41 Å

IA

Site II

IIIA

*

IIA

Site I

IIB
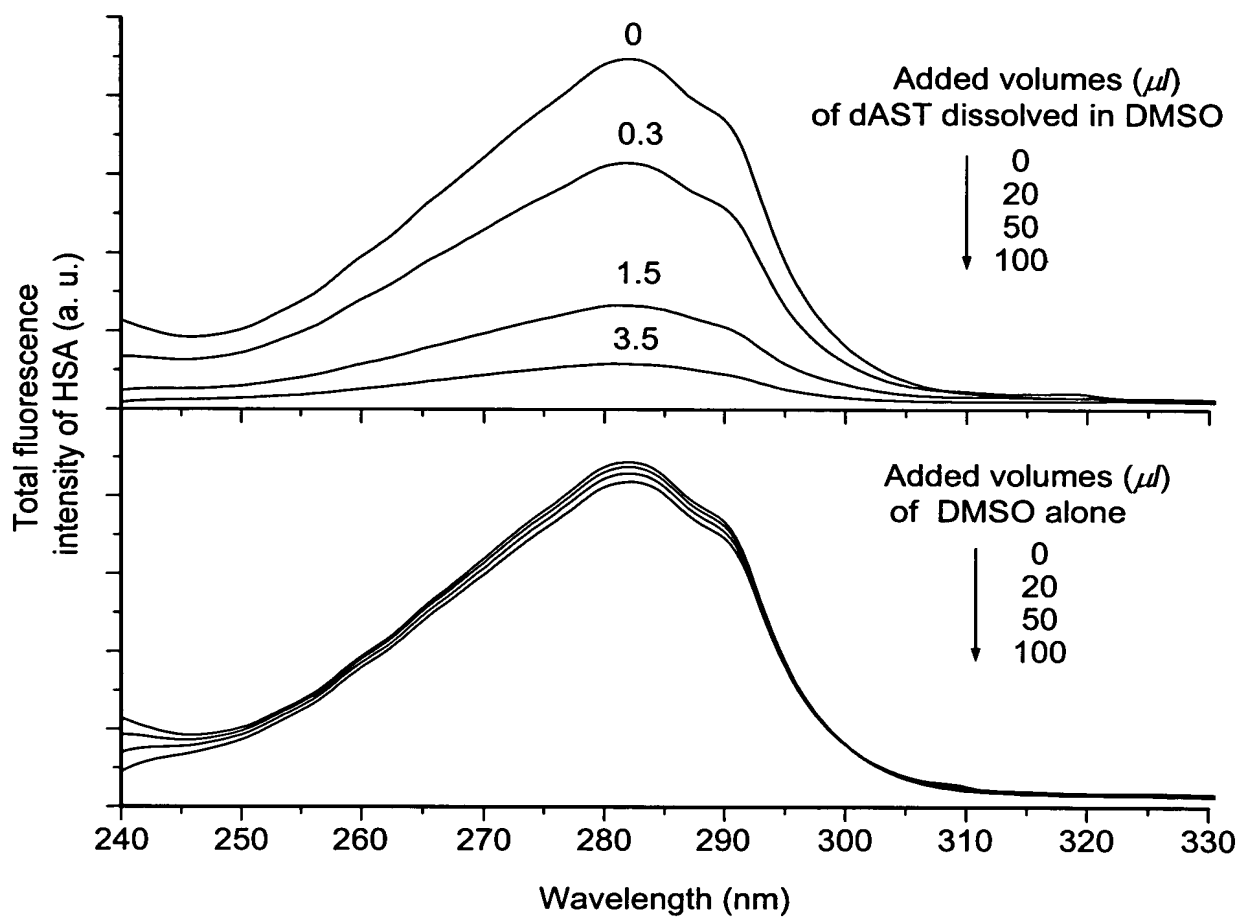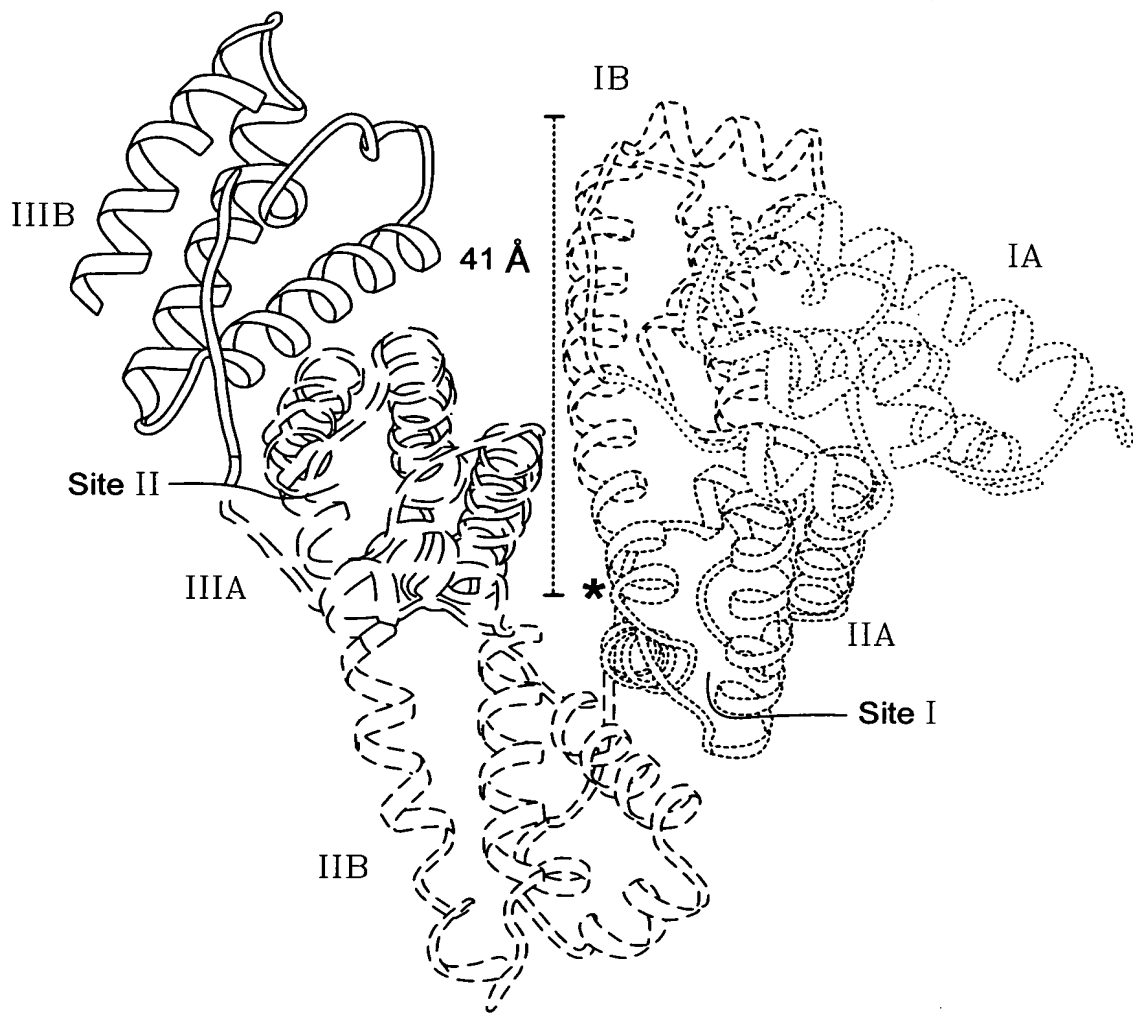
FIG. 13
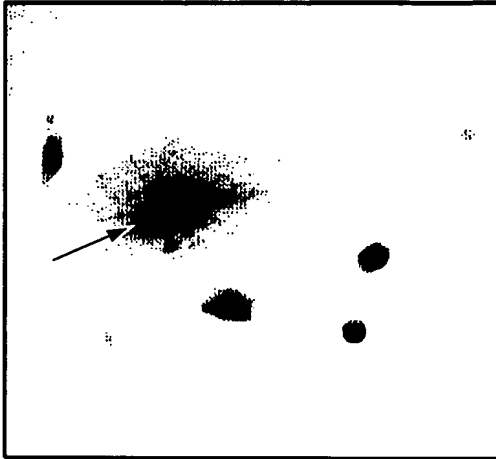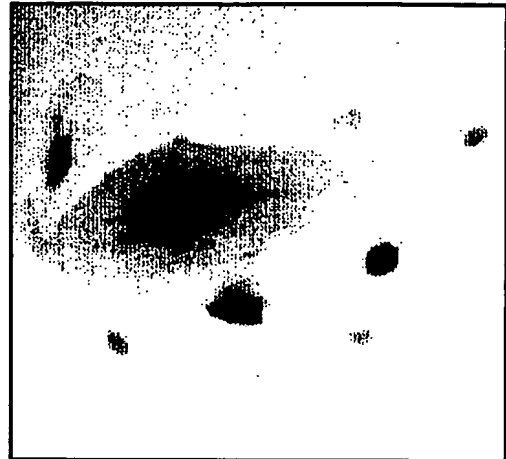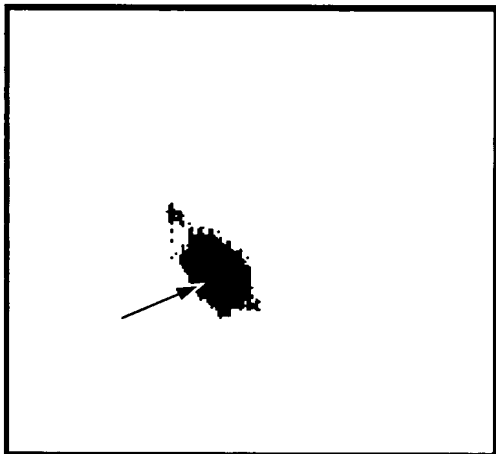
FIG. 14E

FIG. 14F

FIG. 14C

FIG. 14D

FIG. 14A

FIG. 14B

FIG. 15A

FIG. 15B

Fold Induction of Cx43

FIG. 15C

FIG. 15D

Cx43 Fold Induction

FIG. 15E
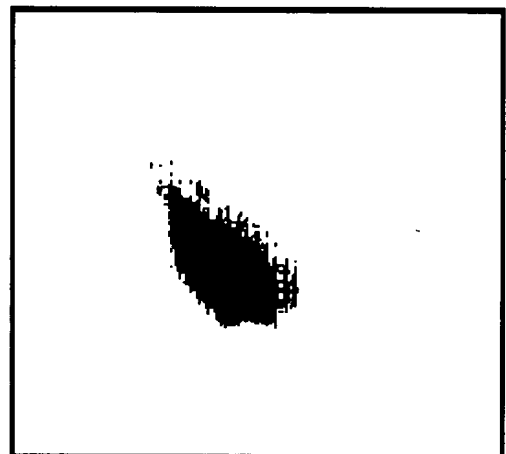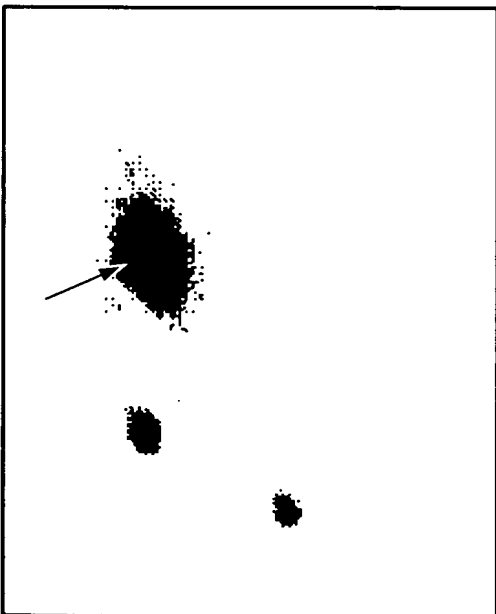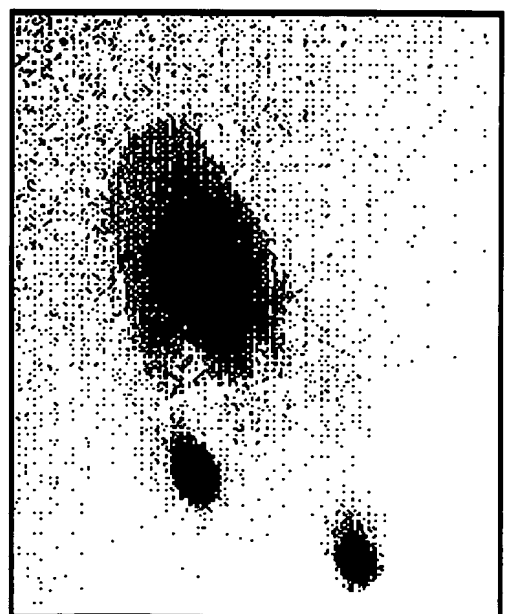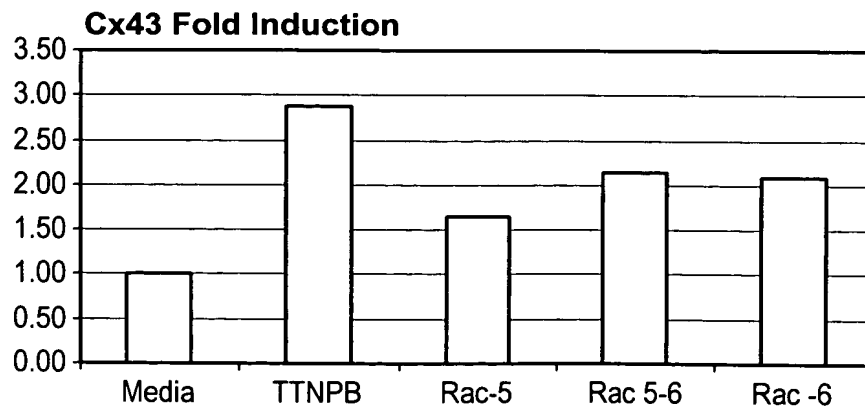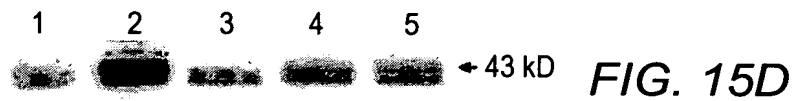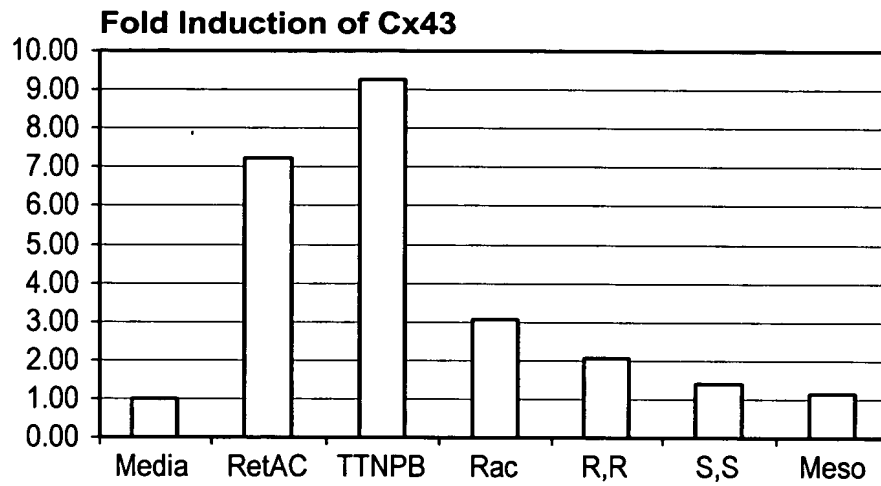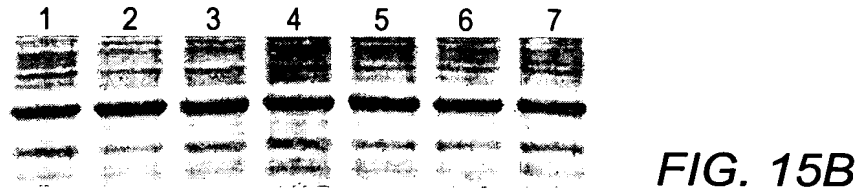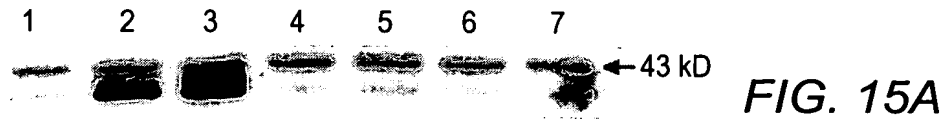
FIG. 16E

FIG. 16F

FIG. 16C

FIG. 16D

FIG. 16A

FIG. 16B

FIG. 17

3R,3'R disodium salt disuccinate astaxanthin derivative

3S,3'S disodium salt disuccinate astaxanthin derivative

3R,3'S disodium salt disuccinate astaxanthin derivative

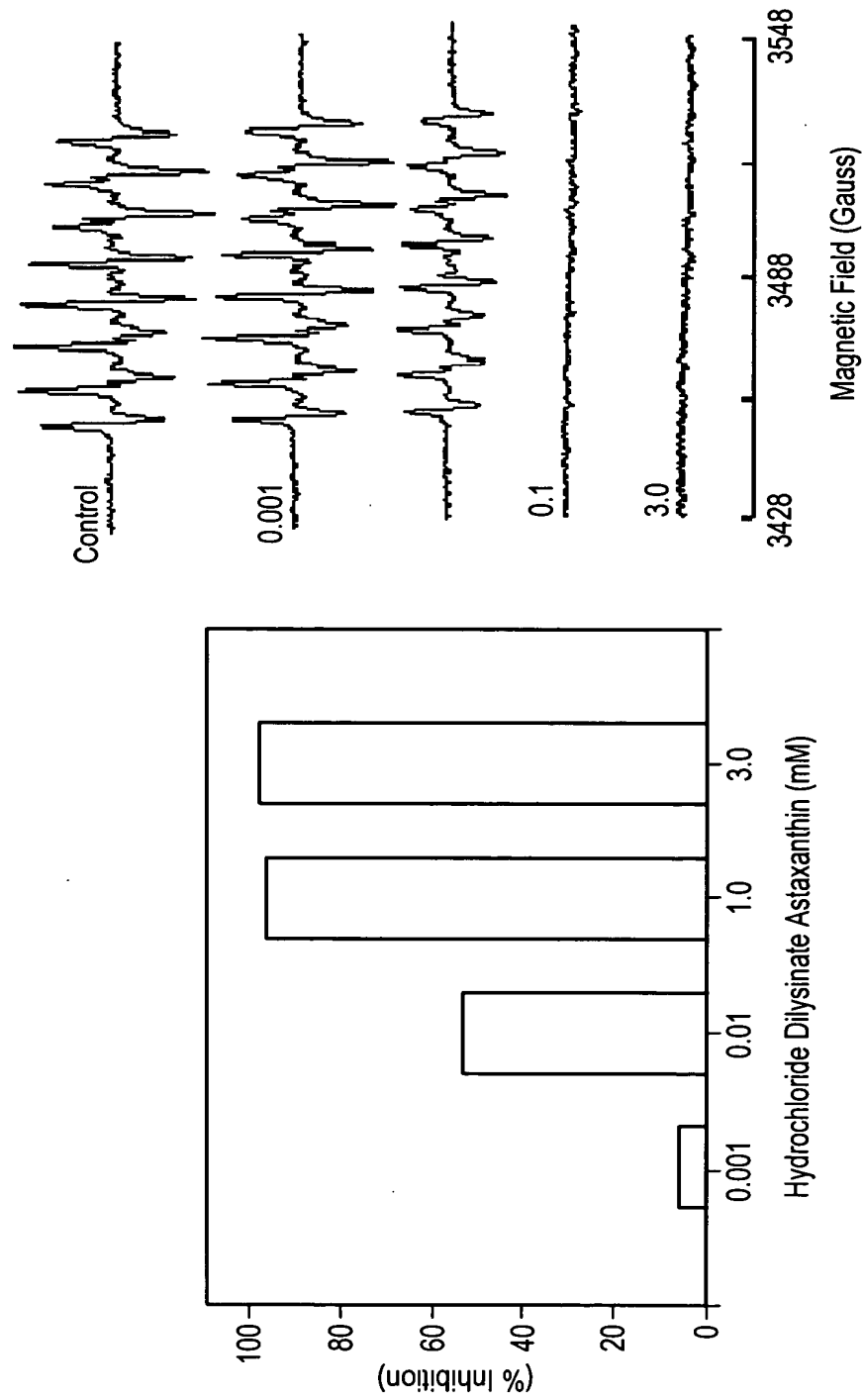3S,3'R disodium salt disuccinate astaxanthin derivative

FIG. 18

FIG. 19
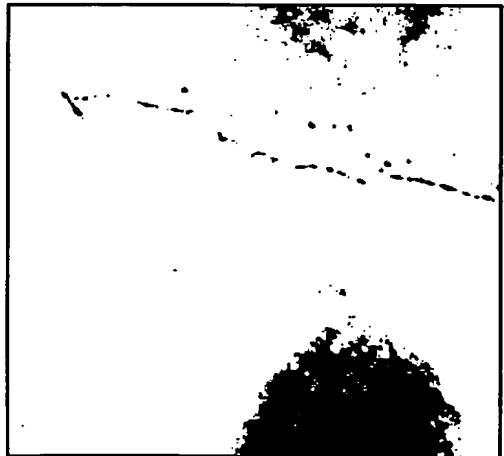
FIG. 20
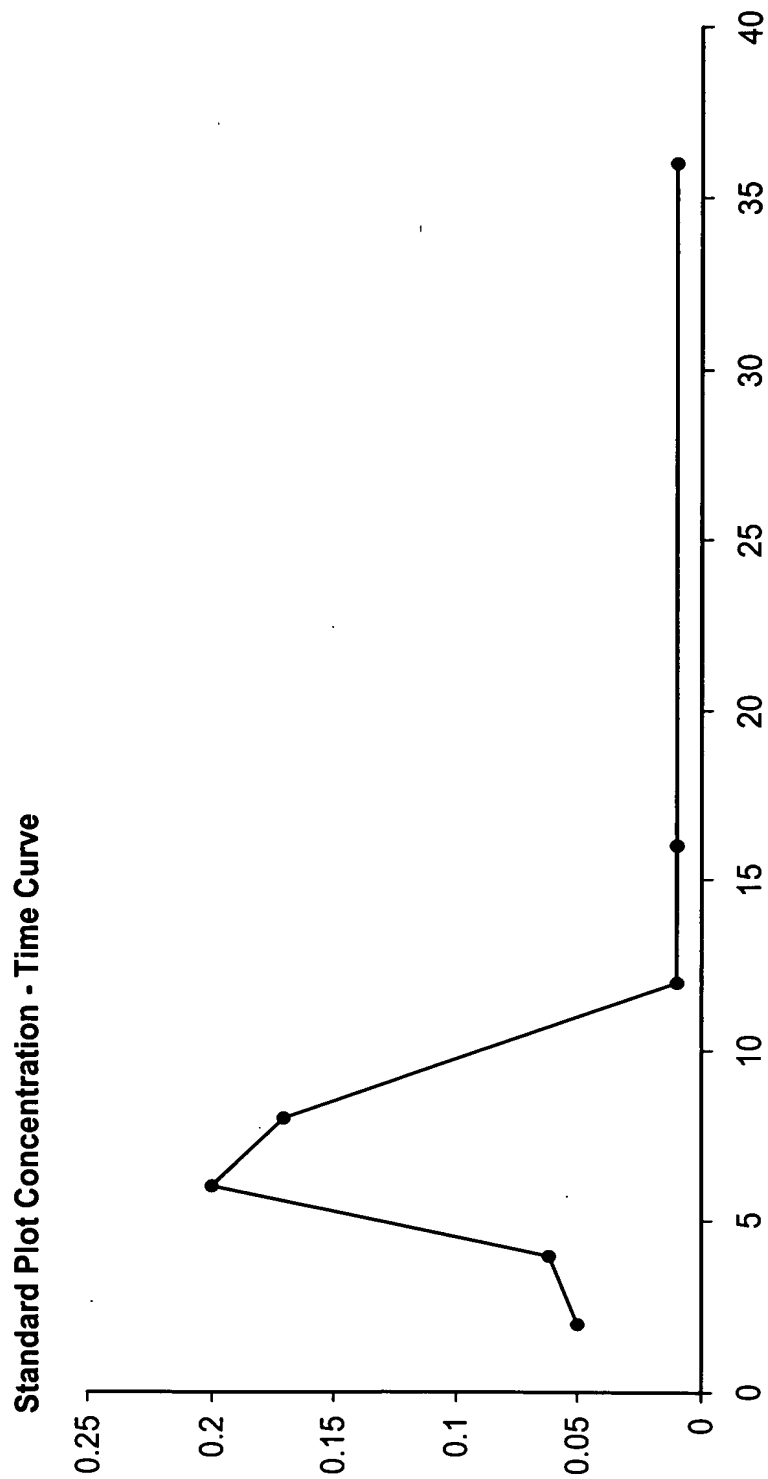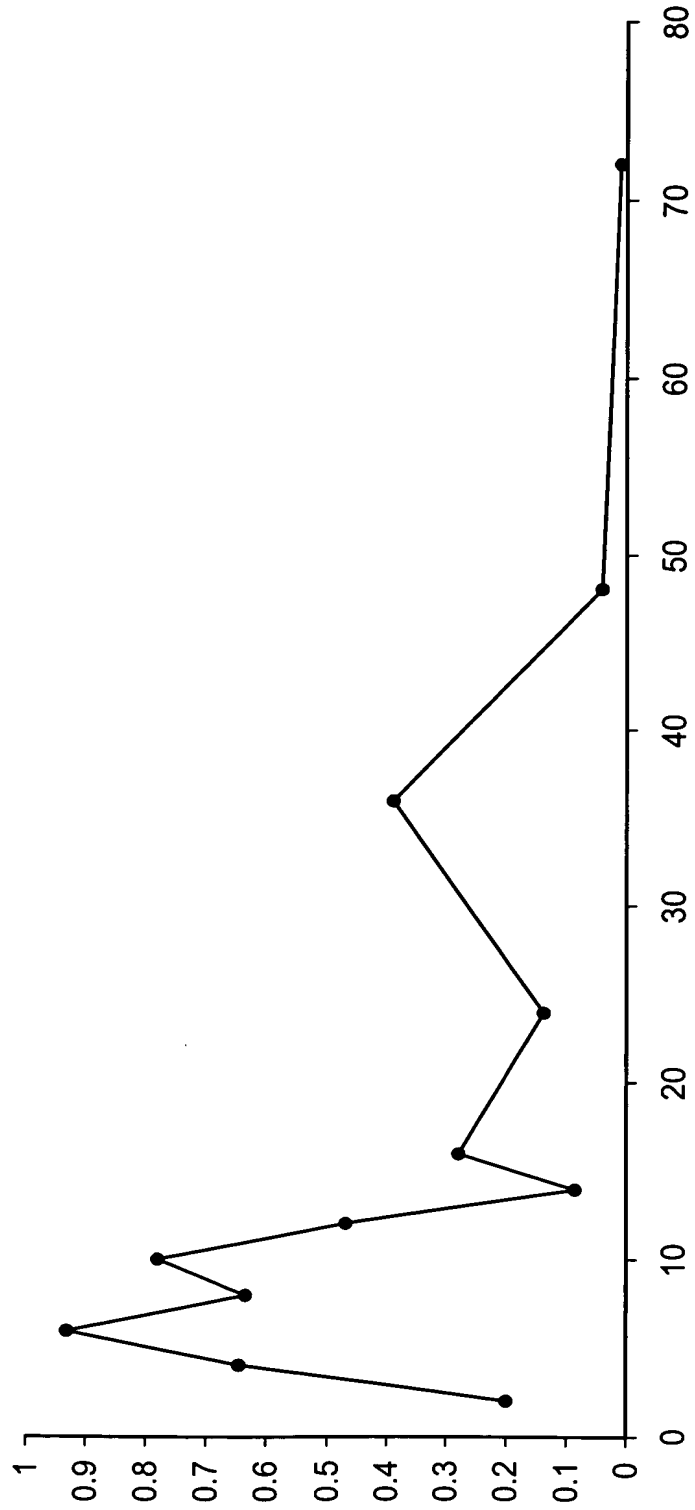
FIG. 21
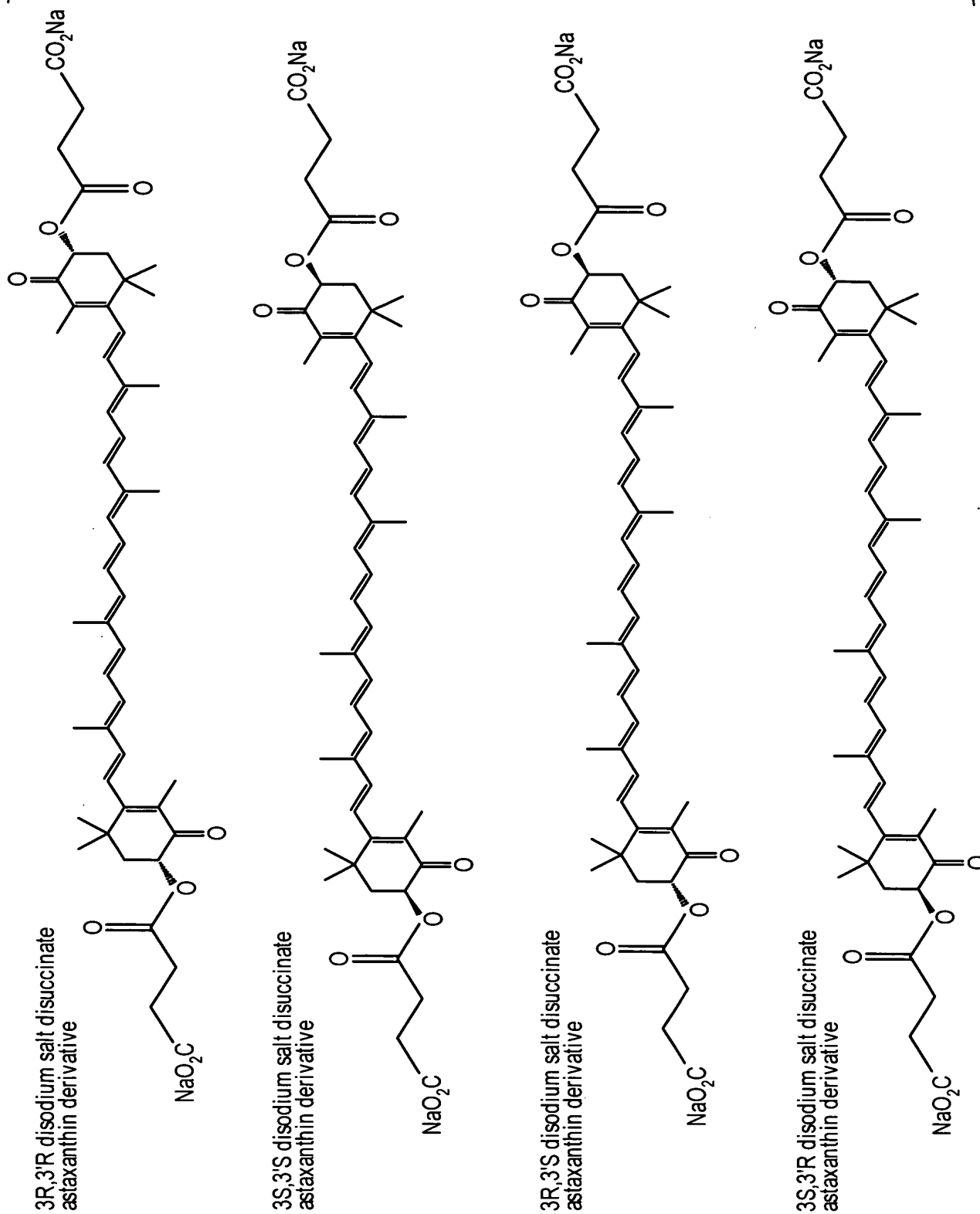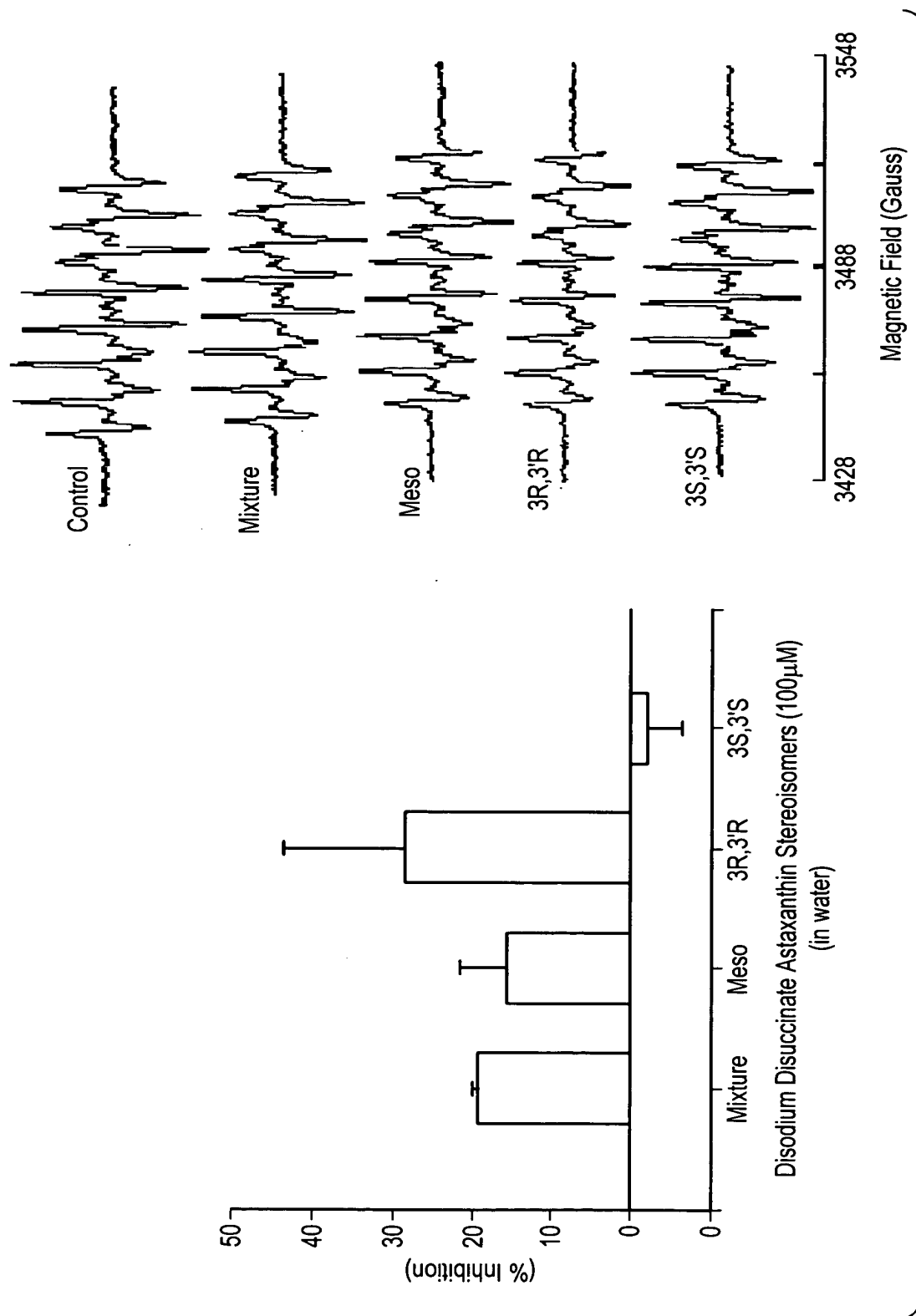
Standard Plot Concentration - Time Curve
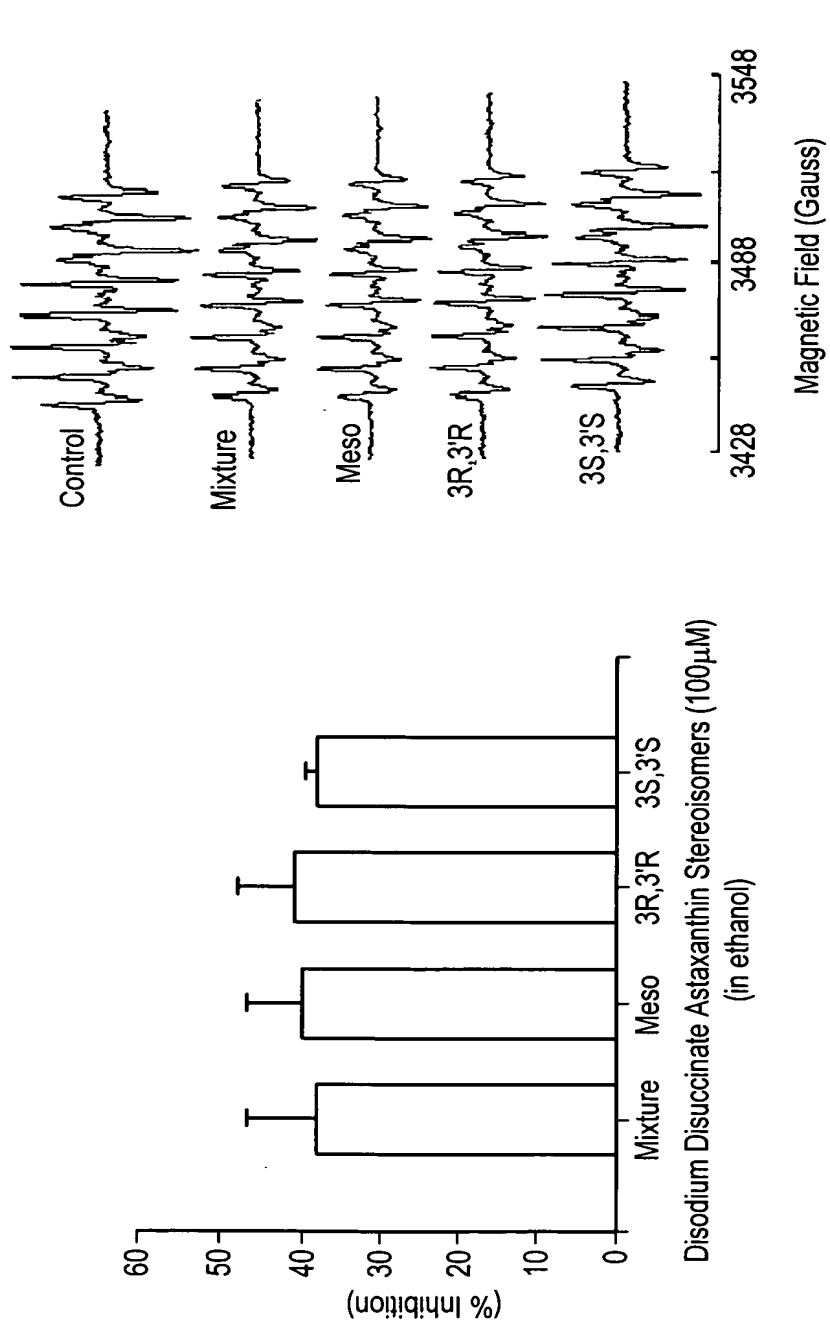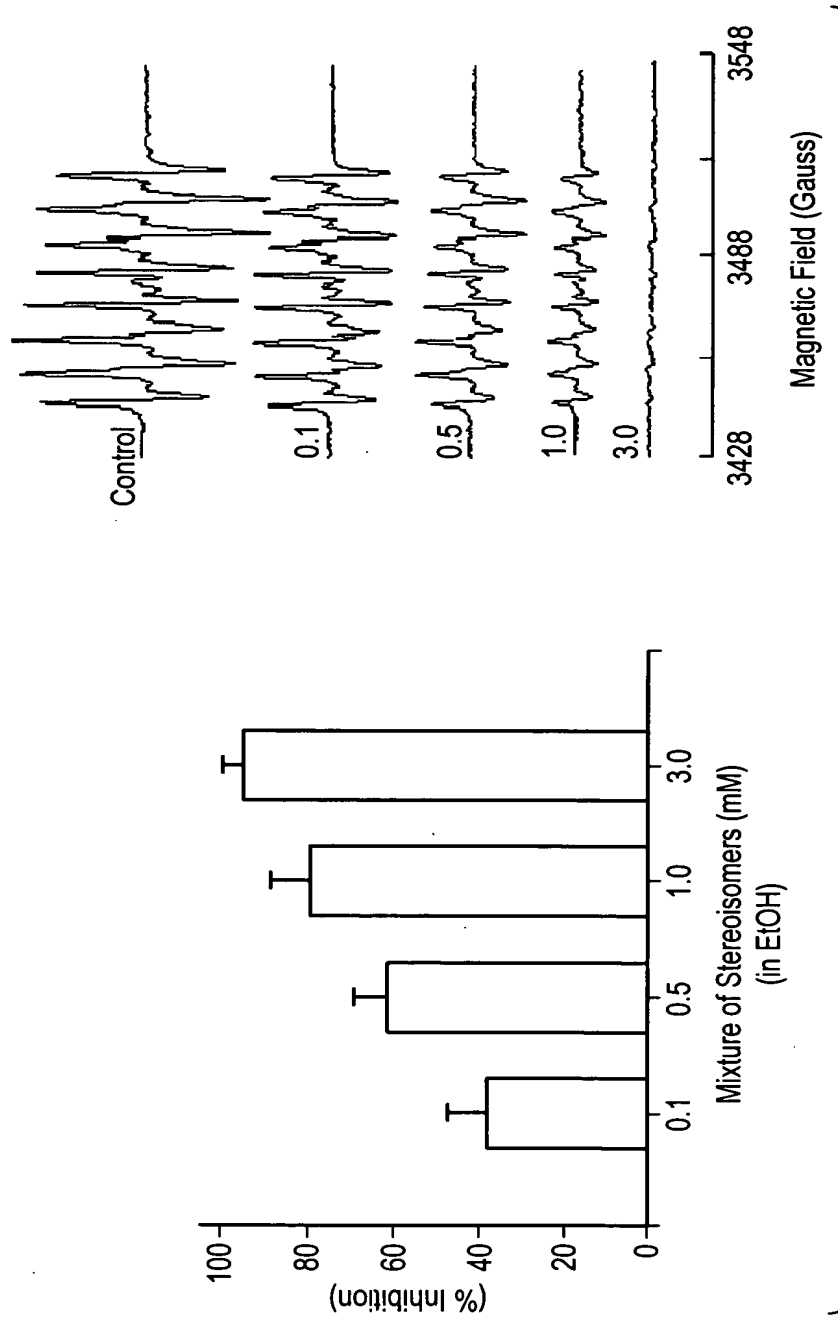
FIG. 22

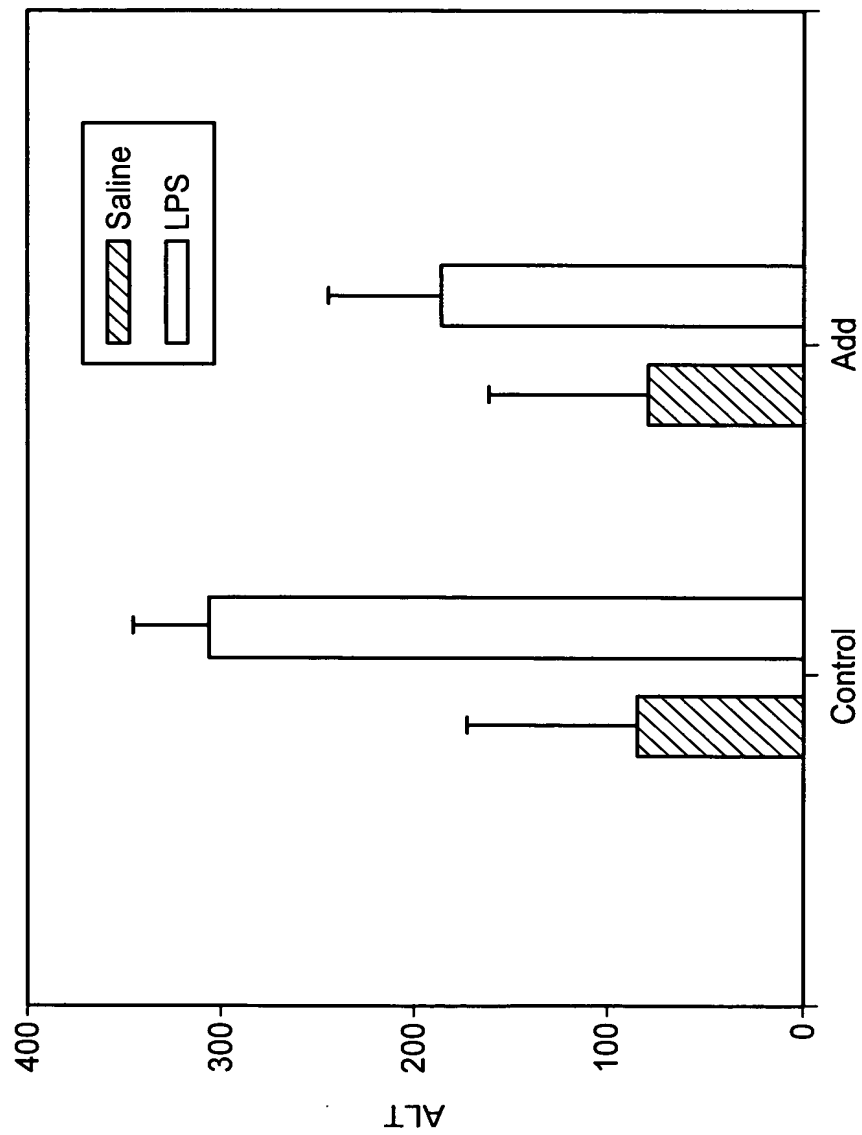Standard Plot Concentration - Time Curve

FIG. 23

FIG. 24

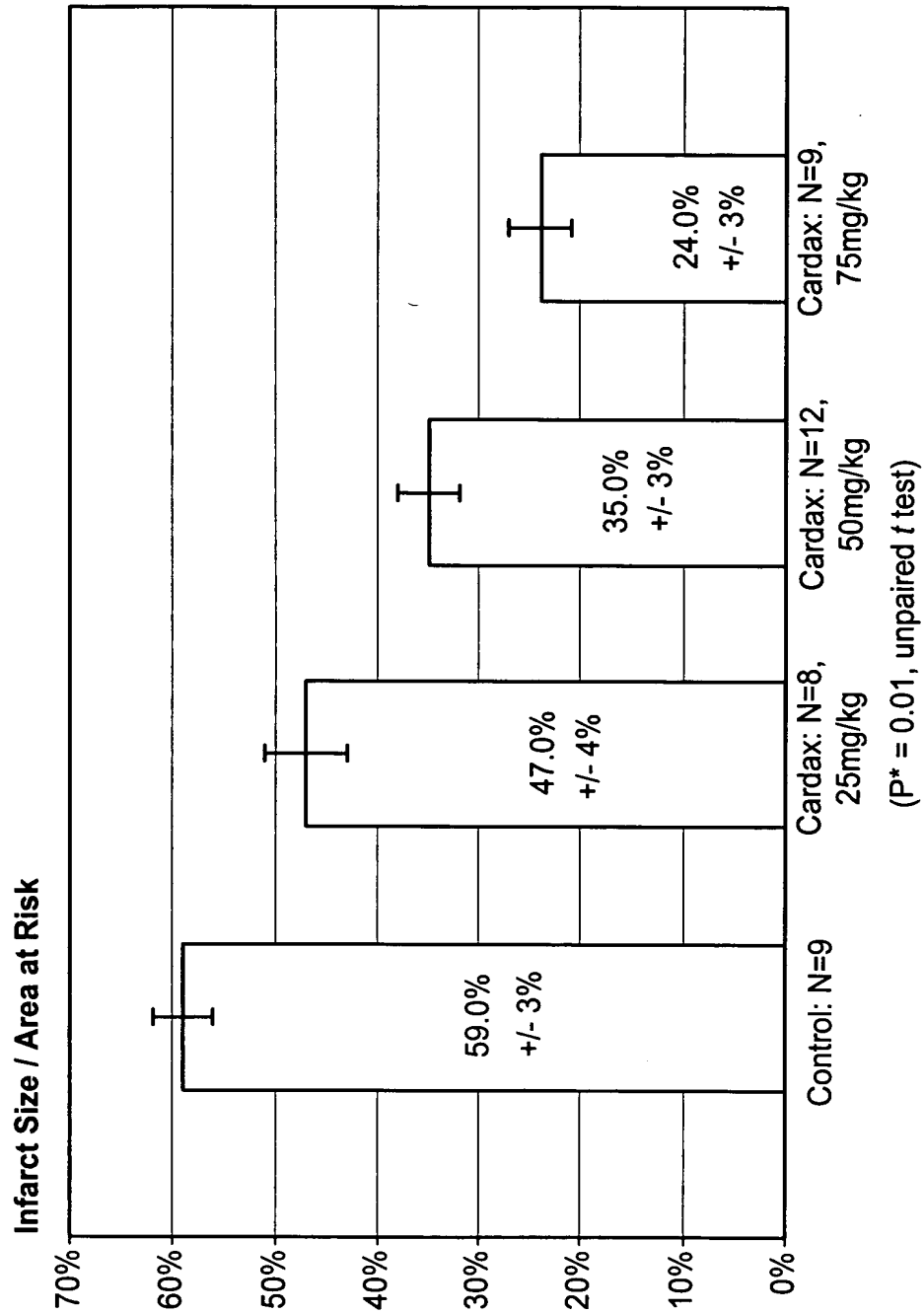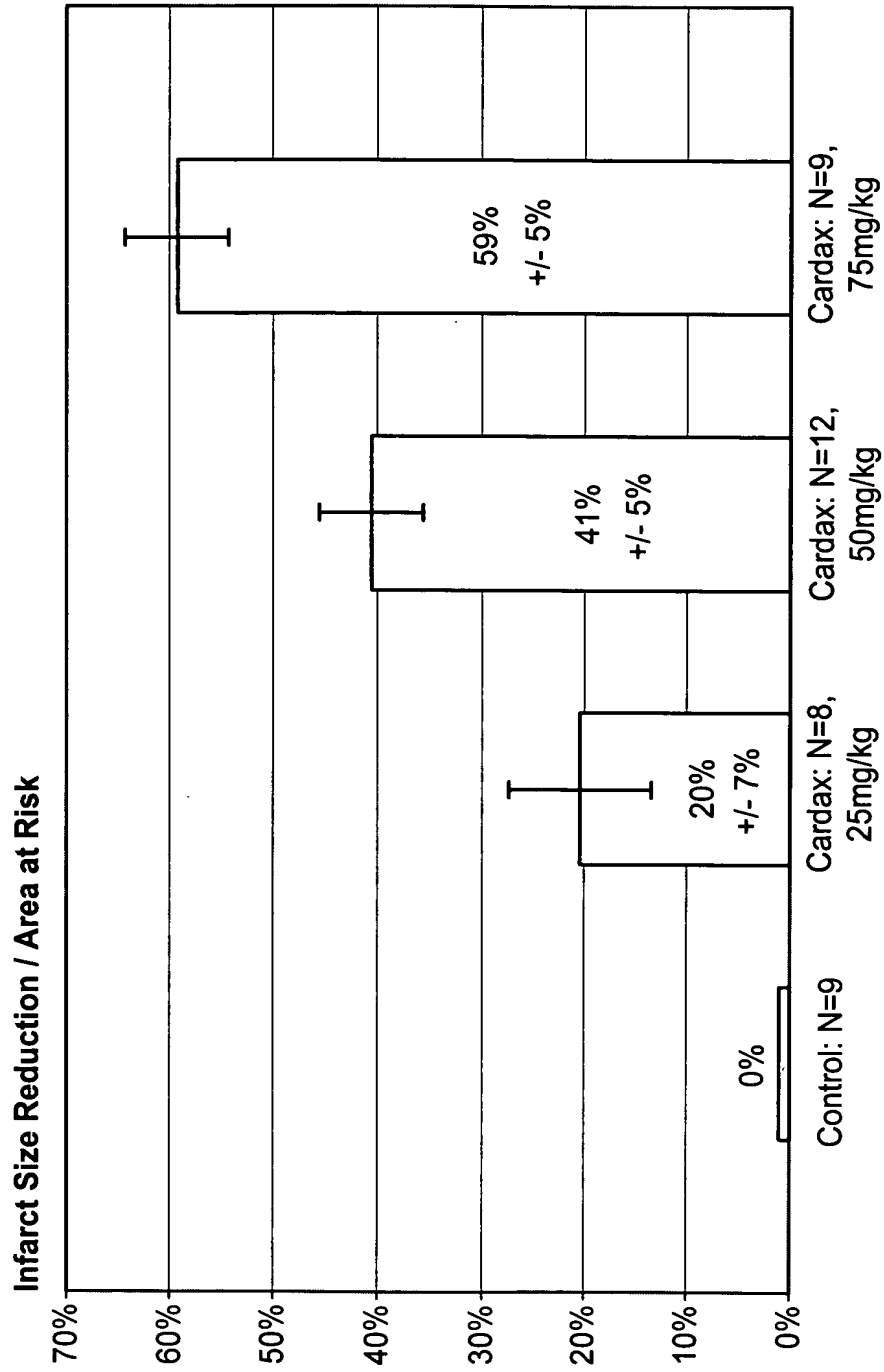**Infarct Size / Area at Risk**

Control: N=9 — 59.0% +/- 3%

Cardax: N=8, 25mg/kg — 47.0% +/- 4%

Cardax: N=12, 50mg/kg — 35.0% +/- 3%

Cardax: N=9, 75mg/kg — 24.0% +/- 3%

(P* = 0.01, unpaired *t* test)

FIG. 25

Infarct Size Reduction / Area at Risk

Control: N=9	Cardax: N=8, 25mg/kg	Cardax: N=12, 50mg/kg	Cardax: N=9, 75mg/kg
0%	20% +/- 7%	41% +/- 5%	59% +/- 5%

(P* = 0.01, unpaired *t* test)

FIG. 26

Transient absorption spectra of diacid-Car in MeCN

delays

5	
10	
15	
20	
25	
50	

Wavelength, nm

Δ-absorbance

FIG. 27

FIG. 28

Transient absorption spectra of ASTA sensitized by NN

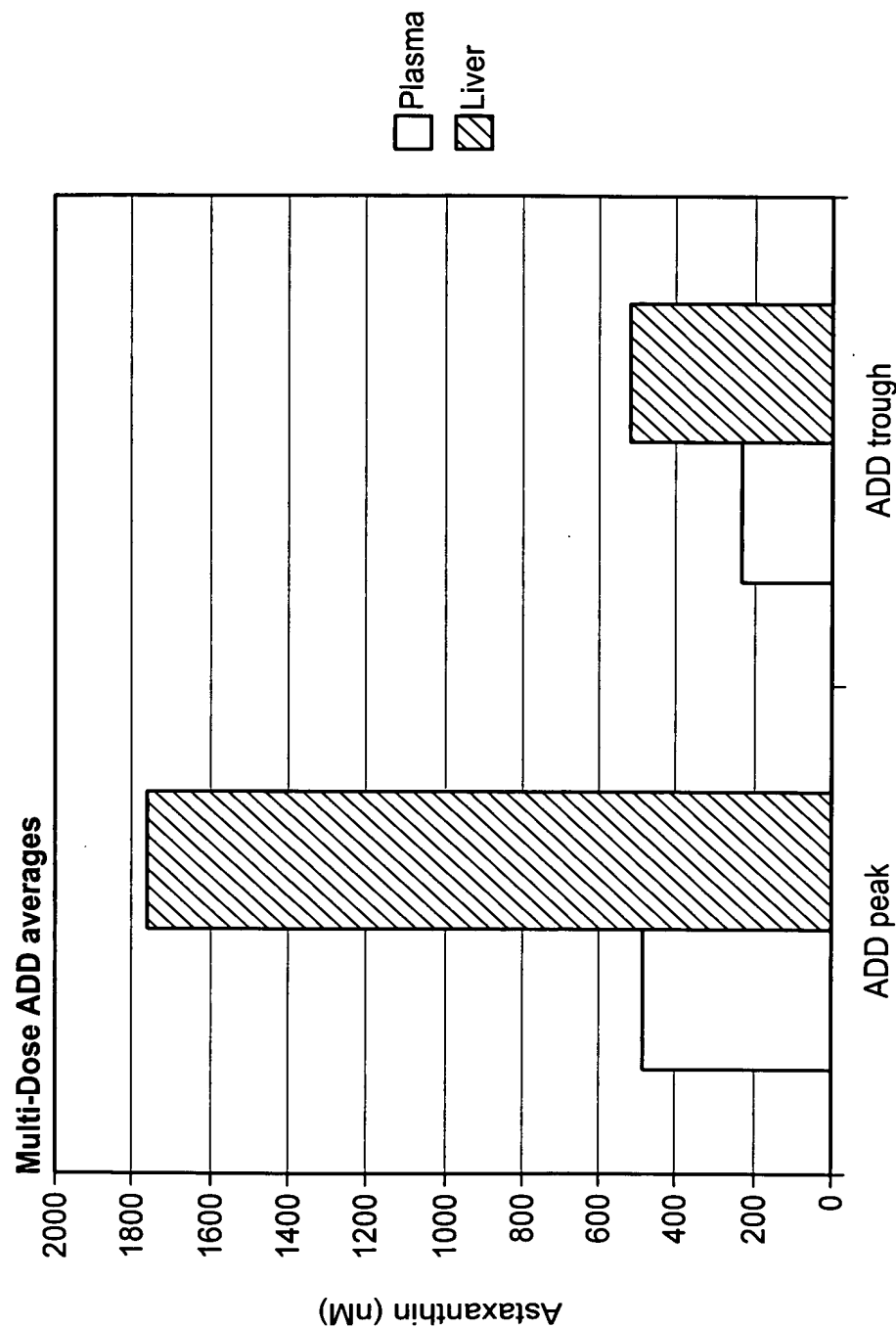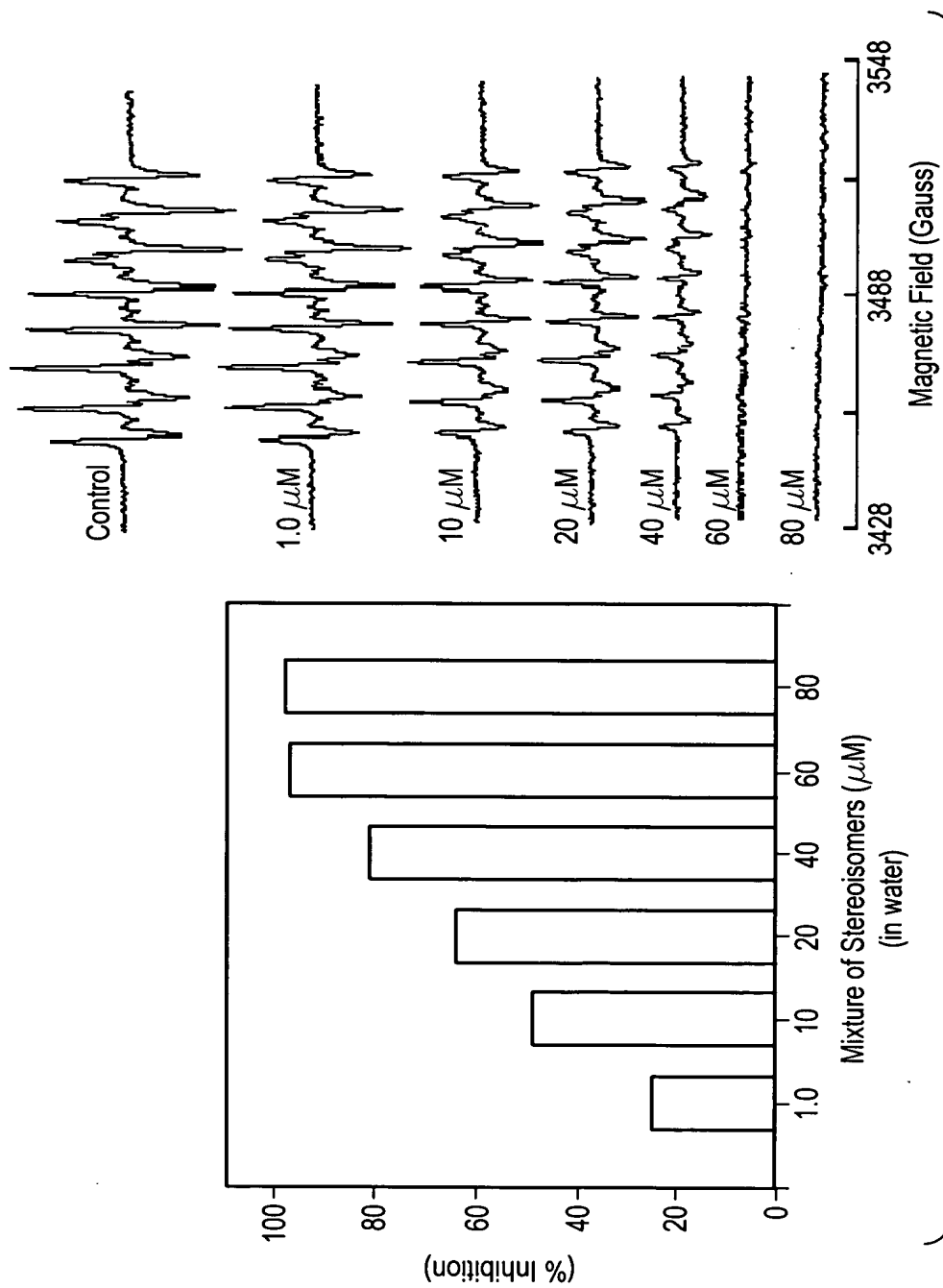NN and ASTA in MeCN

delays, μs
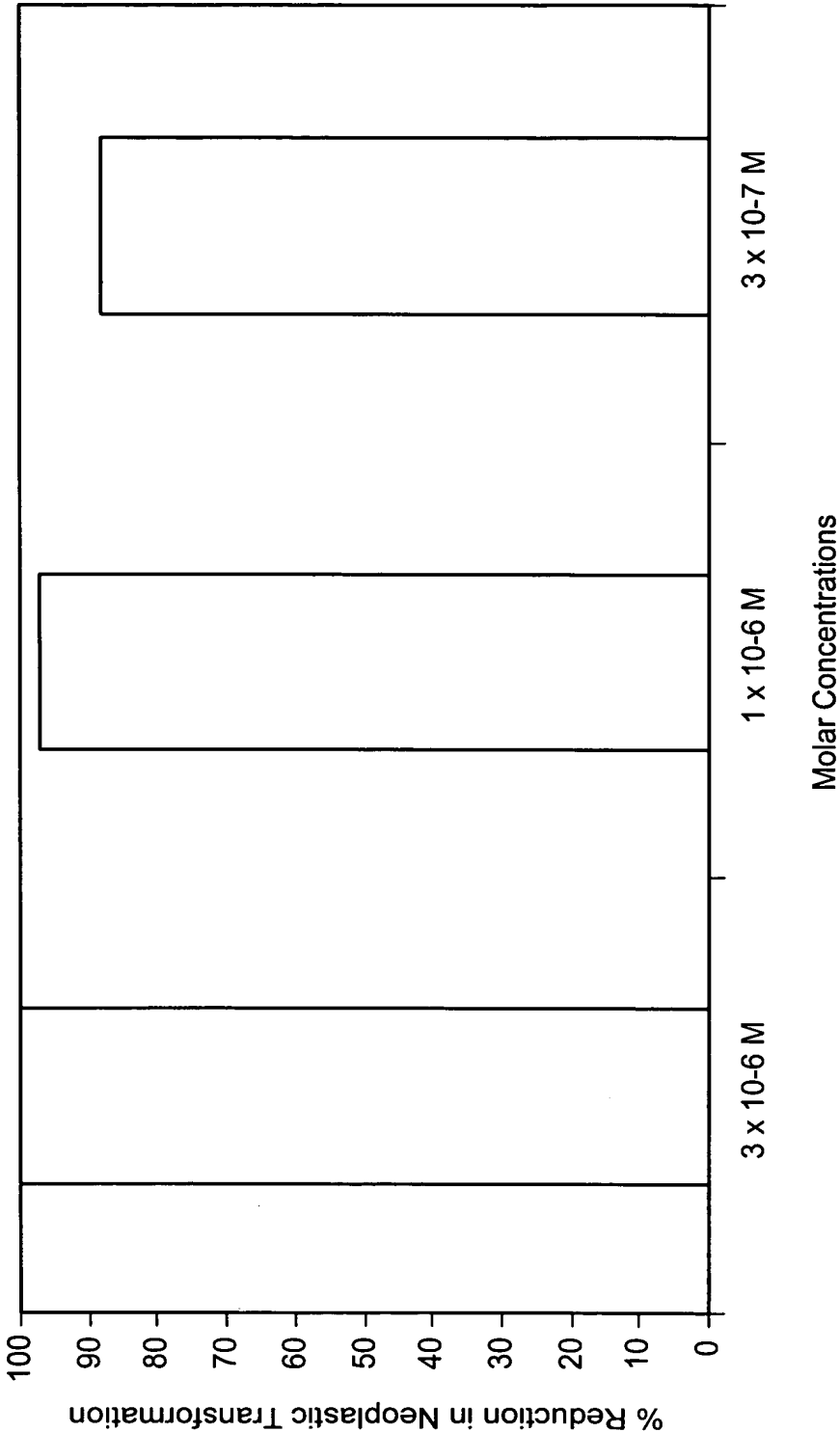5
10
15
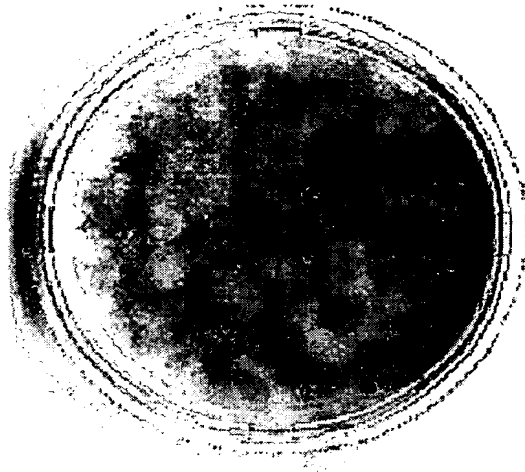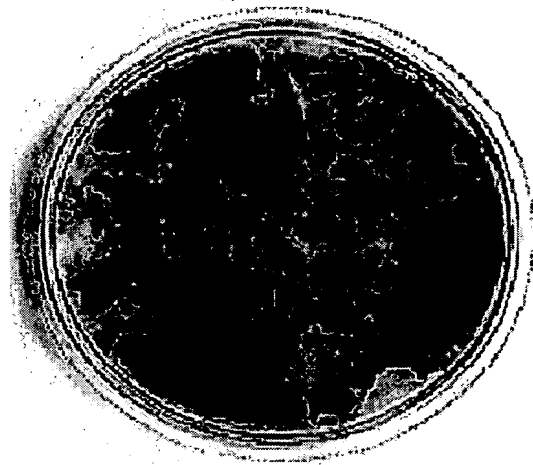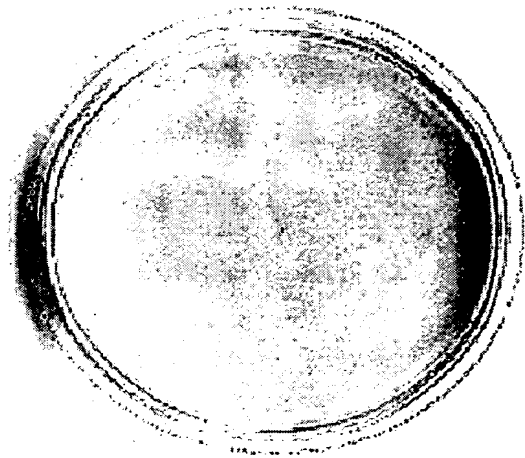20
30
50

FIG. 29

FIG. 30

FIG. 31

FIG. 32

FIG. 33

FIG. 34

FIG. 35C

FIG. 35B

FIG. 35A

FIG. 36

FIG. 37

FIG. 38